

(12) 按照专利合作条约所公布的国际申请

(19) 世界知识产权组织
国际局



(43) 国际公布日:

2005年2月17日(17.02.2005)

PCT

(10) 国际公布号:

WO 2005/014151 A1

(51) 国际分类号: B01D 71/34

(21) 国际申请号: PCT/CN2004/000899

(22) 国际申请日: 2004年8月5日(05.08.2004)

(25) 申请语言: 中文

(26) 公布语言: 中文

(30) 优先权:
03142158.X 2003年8月6日(06.08.2003) CN

(71) 申请人(对除美国以外的所有指定国): 浙江欧美环境工程有限公司(ZHEJIANG OMEX ENVIRONMENTAL ENGINEERING LTD.) [CN/CN]; 中国浙江省湖州市创业大道688号, Zhejiang 313000 (CN).

(72) 发明人;及

(75) 发明人/申请人(仅对美国): 李翔(LI, Xiang) [CN/CN]; 中国浙江省湖州市创业大道688号, Zhejiang 313000 (CN).

(74) 代理人: 杭州杭诚专利事务所有限公司(HANGZHOU HANGCHENG PATENT ATTORNEYS OFFICE CO., LTD); 中国浙江省杭州市江城路887号联银大厦1802室, Zhejiang 310009 (CN).

(81) 指定国(除另有指明, 要求每一种可提供的国家保护):
AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

(84) 指定国(除另有指明, 要求每一种可提供的地区保护):
ARIPO(BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), 欧亚专利(AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), 欧洲专利(AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI(BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

根据细则4.17的声明:

— 发明人资格(细则4.17(iv))仅对美国

本国际公布:

— 包括国际检索报告。

所引用双字母代码和其它缩写符号, 请参考刊登在每期PCT公报期刊起始的“代码及缩写符号简要说明”。

(54) Title: THE PREPARATION METHOD OF EXO-PRESSURE TYPE POLY(VINYLDENE FLUORIDE) HOLLOW FIBER MEMBRANE SPINNED UTILIZING A IMMERSION-COAGULATION METHOD AND THE PRODUCT THEREOF

(54) 发明名称: 沉浸凝胶法纺制外压式聚偏氟乙烯中空纤维膜的制造方法及其制品

(57) Abstract: The invention relates to a preparation method of exo-pressure type ploy (vinylidene fluoride) hollow fiber membrane spinned utilizing an immersion-coagulation method and the product thereof. The invention is performed mainly through the following steps: dissolving and stirring at a certain temperature to obtain a membrane forming solution; by means of a double-tube orifice, spinning the membrane forming solution together with a composite supporting solution which is in the inner tube of the orifice; after a rapid evaporation, performing the two-stage phase-separating coagulations; after a patch, hydrophilizing the resulted phase inversion membrane; thus, obtaining integrally and continuously the exo-pressure type hollow fiber membrane having double barrier layers and a completely spongy supporting layer. Therefore, the invention is provided with a lot of characteristics, such as the formulation of the membrane forming solution being reasonable, the evaporation and immersion spinning method, the two-stage phase-separation coagulations, and the hydrophilization treatment, as well as the technique for forming membrane integrally and continuously being simple and easy without high restricts to device, the technique process being controlled easily, etc. And the membrane is provided with high compression strength and large water permeation flux, and its property is deteriorated very slowly, and cut-off deposits are difficult to form on the membrane surface.

(57) 摘要

本发明涉及一种采用沉浸凝胶法进行纺制外压式聚偏氟乙烯中空纤维膜的制法以及所得的制品。本发明主要通过下述步骤完成: 在一定温度下, 溶解搅拌制成膜溶液; 通过双套管喷头, 与置于喷头中心管内的复合支撑液一同喷出; 经迅速蒸发后, 进行二级分相凝胶; 经漂洗后, 对该相转化膜进行亲水处理; 一体化连续制成双皮层、全海绵状支撑层的外压式中空纤维膜。因此, 本发明具有制成膜液配方合理, 所采用的蒸发-沉浸纺制, 二级分相凝胶, 亲水处理, 一体化连续成膜的制膜工艺简单、易行, 对设备要求不高, 工艺过程易于控制等特点。该膜具有抗压强度高, 水通量大, 膜性能衰减较慢, 在膜表面不易形成截留沉积等特点。

WO 2005/014151 A1